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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,928	12/10/2003	Tomoo Yamamoto	16869G-100000US	8608
20350	7590	10/05/2004	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			RICKMAN, HOLLY C	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,928

Applicant(s)

YAMAMOTO ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 16, 18, 19 and 21-29 is/are rejected.
- 7) ☒ Claim(s) 14, 17 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/30/04, 12/10/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: "least" is misspelled in line
5. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-9, 22, 24 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Bian et al. (US 6599642).

Bian et al. disclose a magnetic recording medium having a substrate a "first seedlayer" formed from CrTa or $\text{Al}_{50}\text{Ti}_{50}$, a "second seedlayer" formed from RuAl, a "first underlayer" formed from NiAl, a Cr alloy "second underlayer", and a magnetic recording layer thereon. The reference teaches that the thickness of the RuAl layer is 3 nm (see claim 10 of Bian et al.) and the thickness of the "first seedlayer" is 10 nm(see claim 39 of Bian et al.). See also figures; col. 4, lines 31-65; Table 1).

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4. Claims 13, 16, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomiyasu et al. (US 2002/0119350).

Tomiyasu et al. disclose a magnetic recording medium having a substrate a "first seedlayer" formed from NiP or NiAl, a "second seedlayer" formed from CrTi or CrW, a "first underlayer" formed from NiAl, CoAl, NiTi, or CoTi, a Cr alloy "second underlayer", and a magnetic recording layer thereon. The reference teaches that the thickness of the CrTi layer is 1 nm (see paragraphs 29-30, 35-36, 38, 45, 67-68, 90).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10-12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bian et al. (US 6599642).

Bian et al. teach all of the limitations of the claims as set forth above except for the specified first underlayer thickness in claims 10-12 and the multilayer underlayer thickness set forth in claim and 28.

Bian et al teaches the use of a combination RuAl/NiAl layer instead of a pure RuAl layer in order to reduce the cost associated with the use of Ru (col. 4, lines 40-49). The reference discloses a thickness range of 3-20 nm for RuAl (see claim 10). Thus, it would have been obvious to one of ordinary skill in the art to choose optimal thicknesses for the RuAl and NiAl

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layers to fall within this range in order to achieve an optimal balance between the benefits associated with the use of the RuAl layer and the cost-effectiveness of using NiAl. Such an optimization would have been obvious since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

7. Claims 23, 25, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bian et al. (US 6599642) in view of Abarra et al. (US 6602612).

Bian et al. teach all of the limitations of the claims as set forth above except for the use of a multilayered magnetic recording film having non-magnetic intermediate layers separating the individual magnetic films.

Abarra et al. teach that it is advantageous to use multiple magnetic films separated by non-magnetic coupling layers in recording media in order to improve thermal stability of the media (col. 2, line 45 to col. 3, line 46; col. 4, lines 41-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the multi-layered magnetic recording structure taught by Abarra et al. for the recording layer taught by Bian et al. in order to improve the thermal stability of the media taught by Bian et al.

8. Claims 15, 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyasu et al. (US 2002/0119350)

Tomiyasu et al. teach all of the limitations of the claims as set forth above except for the use of a CrTi layer for the first seedlayer. It is the Examiner's contention that the two CrTi layers claimed read on Tomiyasu's single CrTi layer in the absence of evidence that the two are structurally distinct. In the case of Tomiyasu et al., the single CrTi layer is formed by sputtering and is structurally the same as multiple CrTi layers sputtered one on top of the other.

9. Claims 1, 3-4, 6-7, 9-10, 12, 22, 24, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. (US 2003/0152810).

Kawai et al. disclose a magnetic recording medium having a substrate, a first layer formed from CrTi, a RuAl layer, a seedlayer formed from NiAl or AlCo, an underlayer formed from a Cr alloy and a magnetic recording layer (paragraphs 23, 29, 33-35, 41-42, 51-54). The reference fails to disclose an example including all of the aforementioned layers (examples are disclosed which include all layers but the seedlayer formed from NiAl or AlCo.). However, the reference teaches that the use of the seedlayer beneath an underlayer serves to control the grain size of the underlayer (paragraph 41). Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to add the NiAl or AlCo seedlayer in combination with the disclosed Cr alloy underlayers to the disclosed example having a CrTi/RuAl structure disposed on a substrate (see paragraph 76).

10. Claims 23, 25, 27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai et al. (US 2003/0152810) in view of Abarra et al. (US 6602612).

Kawai et al. teach all of the limitations of the claims as set forth above except for the use of a multilayered magnetic recording film having non-magnetic intermediate layers separating the individual magnetic films.

Abarra et al. teach that it is advantageous to use multiple magnetic films separated by non-magnetic coupling layers in recording media in order to improve thermal stability of the media (col. 2, line 45 to col. 3, line 46; col. 4, lines 41-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the multi-layered magnetic recording structure taught by Abarra et al. for the recording layer taught by Kawai et al. in order to improve the thermal stability of the media taught by Kawai et al.

Allowable Subject Matter

11. Claims 14, 17, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish at the end.

Holly Rickman
Primary Examiner
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September 30, 2004